Contribution ID: **779** Type: **Parallel session talk**

First Search for $K_L^0 \to \pi^0 e^+ e^- e^+ e^-$ Decay Mode

Friday 19 July 2024 17:19 (17 minutes)

The first search for $K_L^0 \to \pi^0 e^+ e^- e^+ e^-$ is performed with a dataset collected by the J-PARC KOTO experiment in 2021. In the dark sector model, this final state can be achieved through $K_L^0 \to \pi^0 X X, X \to e^+ e^-$. The branching ratio of this decay mode is predicted to be $\mathcal{O}(10^{-10})$ dominated by the virtual photon vertex through $K_L^0 \to \pi^0 \gamma^* \gamma^*$ in the Standard Model. With the data collected in 2021, we can achieve a sensitivity close to this level which can improve the constraints on the dark sector model. Special analysis methods are used for the rejection of backgrounds related to the π^0 Dalitz decay. Results will be presented in the conference.

Alternate track

1. Quark and Lepton Flavour Physics

I read the instructions above

Yes

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Session Classification: Beyond the Standard Model

Track Classification: 03. Beyond the Standard Model